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II. REMARKS

Preliminary Remarks

The applicants appreciate the courtesies extended to their representative during the telephonic interview with Examiner Oropeza conducted on January 22, 2004. A summary of the interview is incorporated into the remarks below.

After entry of this amendment, claims 35-62 will be pending in this patent application, with claims 47, 48, and 50-60 having been withdrawn from consideration pursuant to a previous restriction requirement. By this amendment, the applicants have added dependent claim 61 and independent claim 62. Both of the new claims result from suggestions made by Examiner Oropeza during the interview, and the applicants submit that both of the new claims are properly grouped with the claims that are currently under consideration. The applicants respectfully submit that these amendments do not introduce any new matter.

Although the applicants understand that entry of this response after final rejection is at the discretion of the examiner, entry is respectfully requested, because this response does not raise any new issues that would require additional consideration.

Patentability Remarks

35 U.S.C. § 103

Claims 35-40, 43, 45, 46, and 49 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Dorfmeister *et al.*, U.S. Patent 5,995,868 (hereinafter "the '868 patent") in view of Mizuno-Matsumoto *et al.*, *IEEE Trans. Biomed. Eng.* 46:3 (March 1999) (hereinafter "the article"). The examiner's position is that the '868 patent discloses analysis and treatment of medical disorders. However, the examiner now agrees with the applicants that the '868 patent does not disclose or suggest wavelet cross-correlation analysis. The examiner asserts that the article discloses wavelet cross-correlation analysis. The applicants respectfully disagree.

As the applicants' representative pointed out during the interview, the lead author of the article is Yuko Mizuno-Matsumoto, a co-inventor of the subject matter claimed in the present application. Therefore, the applicants are in a unique position to know what the article does and does not disclose or suggest.

With that in mind, the applicants respectfully submit that the article does not disclose or suggest wavelet cross-correlation analysis, either alone or in combination with the '868 patent. As was explained during the interview, to the extent that the article discloses the use

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of wavelet analysis and cross-correlation analysis, the two methods are taught as separate, competing methods for analyzing the same data.

During the interview, the applicants' representative pointed out certain passages in the article's discussion of cross-correlation analysis that demonstrate the article's view of wavelet analysis and cross-correlation analysis as separate methods. For example, on page 274 of the article, in the first full paragraph, it states, "the cross-correlation between ECoG data from every combination of two electrodes in order to investigate the localization and propagation of epileptiform discharges was used." The article follows that statement with the cross-correlation function for two time series, explaining in the next paragraph that "$f_i(\lambda)$ and $f_k(\lambda)$ are the filtered values of the ECoG data from electrodes i and k." Clearly, cross-correlation is being performed on the ECoG data without any other analysis methods being performed.

The differences between wavelet cross-correlation analysis, as recited in the claims, and the disclosures of the article also become obvious upon comparison. For example, on page 24 of the specification, in the context of wavelet cross-correlation analysis, cross-correlation is performed on wavelet coefficients that result from performing a wavelet transform on the ECoG data, rather than directly on time series of ECoG data, as in the article.

With respect to the use of wavelet analysis in the article, on page 273, in the first full paragraph of the second column, the article states that "by using a combination of the discrete and inverse discrete wavelet transforms, the signal can be decomposed and reconstructed, i.e., filtered." Thus, although the wavelet transform may be performed on the data, the article teaches that the transform should be reversed, so as to create a filtering effect, rather than being used as the basis of another analysis method, as is done in wavelet cross-correlation analysis. This is emphasized by the last two sentences of that paragraph, which state that, "in this study, the peak of the power spectra in the epochs which contained epileptiform discharges was about 16 Hz. Thus, in order to clarify the characteristics of the epileptiform discharges, the signals were filtered at around 16 Hz."

Accordingly, the applicants respectfully submit that a close reading of the article demonstrates that it does not disclose or suggest wavelet cross-correlation analysis. Therefore, the applicants respectfully request that the rejection be withdrawn.

During the interview, the examiner stated that her basis for asserting that the article disclosed wavelet cross-correlation was the first full paragraph of the second column on page 272 of the article, which states that "the goal of the present research was to visualize the

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localization of epileptogenic foci and the propagation of epileptiform discharges using nonstationary methods - specifically, an autoregressive model (AR model), wavelet analysis, and cross-correlation analysis." The examiner noted that the word "methods" is in the plural, indicating (to the examiner) that one or more of the methods mentioned in that sentence are used together.

In response, the applicants respectfully submit that, however the examiner chooses to parse the language and grammar in that particular sentence, the article's actual description of the separate and discrete use of wavelet analysis and cross-correlation analysis contradicts any assertion that wavelet cross-correlation analysis is disclosed or suggested.

During the interview, the examiner also stated that she might be persuaded by the applicants' arguments if there was more information on the record explaining wavelet analysis and cross-correlation analysis and showing that the two were conventionally used separately at the time this invention was made. The examiner also stated that if the applicants chose to submit additional information, she would prefer journal articles, rather than a second declaration from the inventors.

The applicants submit that if the examiner believes that the record in this application is insufficient, she should withdraw the finality of the rejection, so that the issues can be fully explored.

However, with respect to the examiner's specific requests, the applicants respectfully submit that the examiner appears to be asking the applicants to prove a negative. That is, any additional articles that the applicants might submit would most likely not contain an affirmative statement that they are "not disclosing wavelet cross-correlation analysis." Additionally, other articles are unlikely to treat the topics more clearly than the Mizuno-Matsumoto article, which, when read with a full understanding of the subject matter, describes wavelet analysis and cross-correlation analysis as separate and distinct methods.

Furthermore, the applicants believe that there is ample explanation of wavelet analysis, cross-correlation analysis, and wavelet cross-correlation analysis on the record. As required by 35 U.S.C. § 112, the applicants crafted an enabling specification which describes the methods, and, in the course of several written responses and the telephonic interview, the applicants have pointed out certain relevant passages in the specification. Additionally, the applicants have provided a declaration signed by two of the inventors which explains some of the finer points of cross-correlation analysis. All of this is in addition to the considerable selection of prior art references that are of record in this application, copies of which have already been submitted.

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For all of the foregoing reasons, the applicants respectfully submit that the rejection of claims 35-40, 43, 45, 46 and 49 should be withdrawn and not extended to new claims 61 and 62. New claims 61 and 62 recite certain tasks of a wavelet cross-correlation analysis, as suggested by the examiner.

Claims 41 and 44 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over the '868 patent in view of the Mizuno-Matsumoto article and further in view of Ward *et al.*, U.S. Patent No. 5,978,702 (hereinafter "the '702 patent"). The examiner's position on the '868 patent and the article is as stated in the previous rejection under 35 U.S.C. § 103(a). With respect to claims 41 and 44, the examiner asserts that the '702 patent discloses electrical stimulation techniques and drug infusion techniques.

The applicants respectfully submit that, regardless of what the '702 patent may or may not disclose or suggest with respect to electrical stimulation and drug infusion, the cited combination of references does not disclose or suggest wavelet cross-correlation analysis. Therefore, the applicants submit that claims 41 and 44, which depend from claim 35, are allowable over the cited combination of references, and request that the rejection be withdrawn and not extended to new claims 61 and 62.

Claim 42 was rejected under 35 U.S.C. § 103(a) as allegedly being obvious over the '868 patent in view of the Mizuno-Matsumoto article, and further in view of King *et al.*, U.S. Patent No. 5,925,070 (hereinafter "the '070 patent"). The examiner's position on the '868 patent and the article is as stated in the previous rejections under 35 U.S.C. § 103(a). With respect to claim 42, the examiner asserts that the '070 patent discloses controlling excitation levels using dynamic feedback to maintain charge balance.

The applicants respectfully submit that, regardless of what the '070 patent may or may not disclose or suggest with respect to controlling excitation, the cited combination of references does not disclose or suggest wavelet cross-correlation analysis. Therefore, the applicants submit that claim 42, which depends from claim 35, is allowable over the cited combination of references, and request that the rejection be withdrawn and not extended to new claims 61 and 62.

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III. CONCLUSION

In view of the foregoing, the applicants respectfully submit that this application is in condition for allowance. A timely notice to that effect is respectfully requested. If any questions relating to patentability remain, the examiner is invited to contact the undersigned.

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,

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